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(54) **Drive for overhead suspension assembly**

(57) A support member (1) is fixed to the assembly (which may be part of a disabled persons' hoist unit or goods hoist unit) and projects laterally beyond a track (2) along which the suspended assembly is to be driven. A first arm (6) is pivotally attached at one end to the laterally projecting part of the support member (1) for movement in an horizontal plane and has at its free end a drive roller (7) which is belt-driven from a motor-driven wheel (5) centred on the pivotal axis (4). A second arm (9) is pivotally attached by a shaft (8) to the free end of the first arm (6) for angular motion about the axis of the drive roller (7). This second arm (9) rotatably carries a support roller (10) and at its free end is coupled by a spring (12) to the first arm (6) so as continuously to bias the drive roller (7) and the support roller (10) into contact with opposite sides of the track (2).

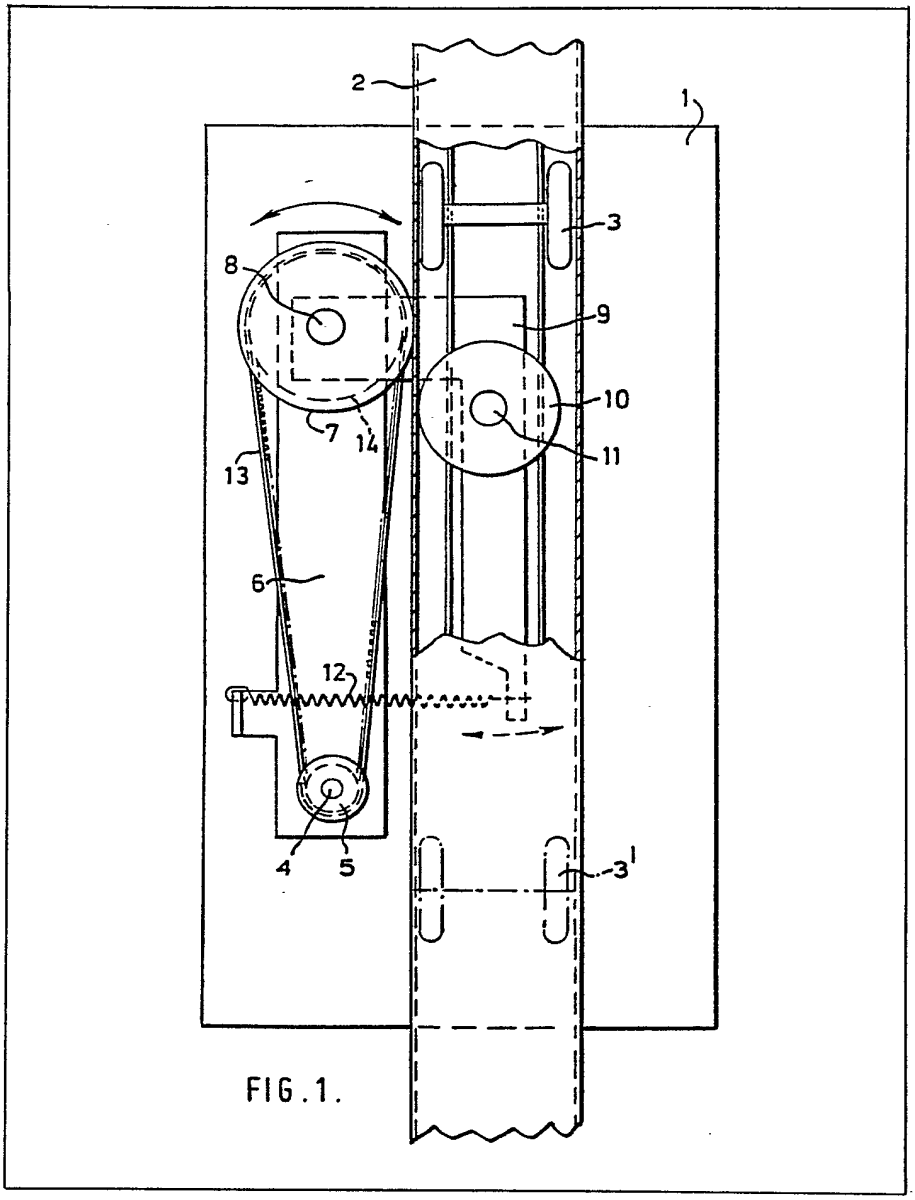

FIG.1.

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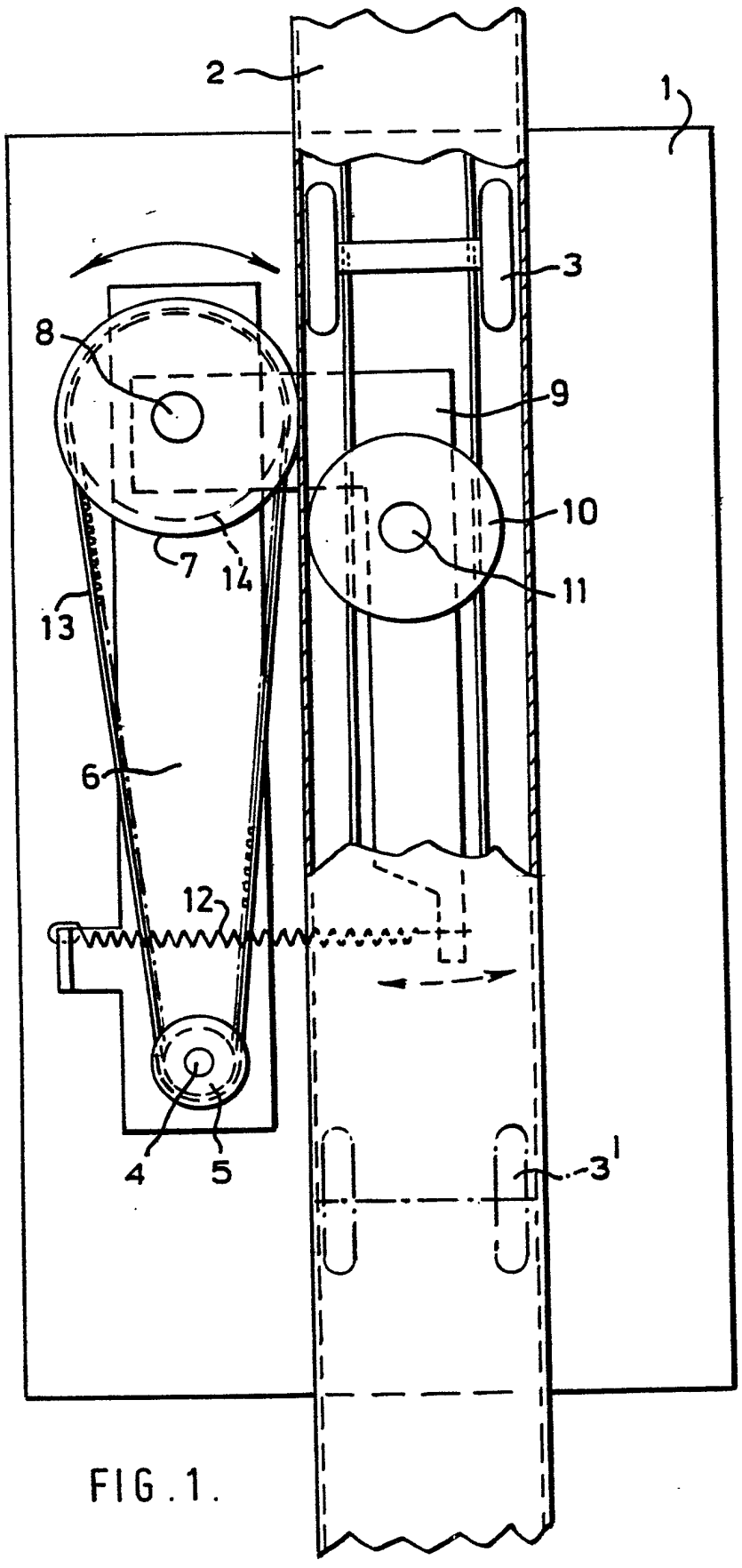

FIG.1.

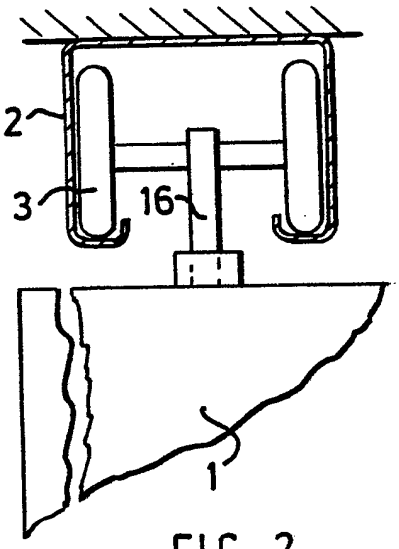

FIG.2.

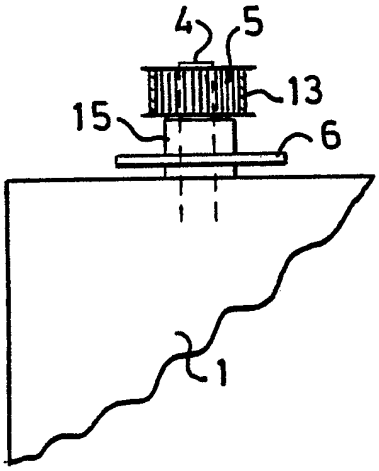

FIG.3.

SPECIFICATION

Overhead suspension assembly traversing device

This invention relates to an overhead suspension assembly traversing device.

A particular overhead suspension assembly is that by which a hoist unit is suspended from an horizontal track along which it is required to be traversed from end to end in a straight or curved path in order to reach a desired location.

The requirements for a traversing device are firstly that is should be compact, secondly that it should be capable of traversing the suspension assembly not only along straight tracks but also around left and right hand curves which may form part of the same track and thirdly that it should conform to variations in track alignment and curvature without the need for adjustment on each installation.

Experience has shown that a traversing device utilising a simple motor-driven pressure roller, made of friction material such as hard rubber, acting on the track is unsatisfactory owing to the difficulty of maintaining adequate roller pressure under all conditions. It has been found that, especially for negotiating curves, the pre-loading of the roller has to be excessive to cope with the relative movement of the roller and the track.

The present invention has been devised with the general intention of providing a traversing device which fulfills the abovementioned requirements and is not subject to the also abovementioned disadvantage.

In accordance with the present invention therefore, an overhead suspension assembly traversing device comprises a support member fixed to the assembly and projecting laterally beyond a track from which the assembly is movably suspended and along which the assembly is to be traversed; a first arm pivotally attached at one end to the laterally projecting support member part for movement in a horizontal plane; a horizontal drive roller mounted on the free end of this arm and belt-driven from a motor-driven wheel centred on the pivotal axis of the arm; a second arm pivotally attached at one end for angular motion about the axis of the drive roller; a horizontal support roller rotatably mounted on the lever arm and a tension spring which couples the first arm and the second arm so as continuously to bias the drive roller and the support roller into contact with opposite sides of the track.

Conveniently the overhead suspension assembly comprises a carriage having at each end a pair of spaced co-axial running wheels which are supported on opposed inturned side flange parts of a track which is of inverted channel section.

A particular and at present preferred embodiment of the invention is illustrated in the accompanying drawing and is hereinafter described. In this drawing:

Fig. 1 is a plan view of an overhead suspension assembly and traversing device with a suspension track partly cut away;

Fig. 2 is a fragmentary sectional elevation showing suspension details; and

Fig. 3 is a fragmentary elevation showing drive details.

Referring now to the drawing there is shown a track, a suspension assembly and a traversing device, the suspension assembly being associated with a personal hoist unit for the use of disabled persons. Alternatively the suspension assembly and traversing device could be used in conjunction with a goods hoist unit.

The suspension assembly comprises a pair of wheel units 3, 3′ each attached by a vertical rod 16 near a respective end of the top of a hoist unit 1 which also acts as a support for the traversing device. The spaced wheels of each wheel unit are supported by inturned opposite flange parts of an inverted channel section track 2 fixed to a ceiling.

The top of the hoist unit is laterally extended and has a housing 15 which contains a bearing for a vertical shaft 4. This shaft 4 is driven by a small reversible electric motor (not shown). The housing 15 serves as a pivot for one end of an arm 6 which is angularly movable in a horizontal plane as indicated by the arrows at its free end. Attached to the top of the shaft 4 is a toothed pulley 5 which by means of a toothed belt 13 drives a toothed pulley 14 mounted on a shaft 8 carried at the free end of the arm 6. Rotatably with the pulley 14 is a friction drive roller 7. A second arm 9 which is of L-Shape is pivotally mounted at one end on the shaft 8 and intermediate its end has a vertical shaft 11 which rotatably receives a backing or support roller 10. The free end of the lever 9 is movable through a small arc as indicated by the adjacent arrows and is coupled to an extension of the arm 6 by a tension spring 12. This tension spring thus not only biases the arm 6 to maintain the friction drive roller in driving contact with the outside face of the track side but also biases the arm 9 so that the support roller 10 continuously engages the inside face of the track side. Thus in use the entire device pivots about the housing 15 as the friction drive roller 7 moves to and fro as a result of distortions and intentional curves in the track 2 at the same time as pressure is maintained between the roller 7 and the track 2 by means of the backing or support roller 10 in spite of the movement of the arm 6. Because the arm 6 is pivoted on the same axis as the pulley 5 which drives the belt 13, the belt tension remains constant.

CLAIMS

1. An overhead suspension assembly traversing device comprising a support member fixed to the assembly and projecting laterally beyond a track from which the assembly is movably suspended and along which the assembly is to be traversed, a first arm pivotally attached at one end to the laterally projecting part of the support member for movement in a horizontal plane, a horizontal drive roller mounted on the free end of this arm and driven from a motor-driven wheel centred on

the pivotal axis of the arm, a second arm pivotally attached at one end for angular motion about the axis of the drive roller, a horizontal support roller rotatably mounted on the second arm, a tensioning means which couples the first arm and the second arm so as continuously to bias the drive roller and the support roller into gripping contact with the track.

2. An overhead suspension assembly traversing device as claimed in claim 1 in combination with an overhead suspension assembly comprising a carriage having at each end a pair of spaced co-axial running wheels which are supported on opposed inturned side flange parts of a track which is of inverted channel section.

3. An overhead suspension assembly traversing device as claimed in claim 1 or claim 2 wherein the second arm is of L-shape.

4. An overhead suspension assembly traversing device as claimed in any of claims 1 to 3 wherein the drive roller and the support roller engage the respective side surfaces of one side of an inverted channel section track.

5. An overhead suspension assembly traversing device in combination with an overhead suspension assembly and substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

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ABSTRACT:

A support member (1) is fixed to the assembly (which may be part of a disabled persons' hoist

unit or goods hoist unit) and projects laterally beyond a track (2) along which the suspended assembly is to be driven. A first arm (6) is pivotally attached at one end to the laterally projecting part of the support member (1) for movement in an horizontal plane and has at its free end a drive roller (7) which is belt-driven from a motor- driven wheel (5) centred on the pivotal axis (4). A second arm (9) is pivotally attached by a shaft (8) to the free end of the first arm (6) for angular motion about the axis of the drive roller (7). This second arm (9) rotatably carries a support roller (10) and at its free end is coupled by a spring (12) to the first arm (6) so as continuously to bias the drive roller (7) and the support roller (10) into contact with opposite sides of the track (2). □